

The Renewable Energy Transition and the Economics of Banning Coal Based Electricity Generation in India

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Background to Paper

- India: aim Net Zero by 2070
- Transition to Renewables: BAU (slow) v. Carbon Pricing
Transition before 2070 (even BAU)
- One potential policy: Banning Coal
Ban Existing Plants v. Banning New Coal Build?
- Command & Control (C&C) v. Market-Based Instrument (MBI)
- Command & Control: More Certainty about Outcome
- Market-Based Instrument: Minimise Total Costs of Abatement
Flexibility: Incentives to Abate (Now and in the Future)

Question and Analysis

- Question: Difference between Banning (C&C) and Carbon Pricing (MBI)?
- Model: Planner deciding Coal and Renewable Power Plant Build
- No new coal build, if $MB < MSC$
- Transition: Substitution of Coal by Renewables (Lifetime of Coal Plant)

Results

- Optimal Transition Time
 - BAU: 2056 (wait for plant retirement)
 - External Costs Included: 2023 (MB < MSC)
- Timing of Ban (Deadweight Loss as % of GDP):
 - 2030 (10.4% of GDP)
 - 2040 (3.5% of GDP)
 - 2050 (0.7% of GDP)
 - 2056 (0% of GDP)

Conclusion

- Difference btw Banning (C&C) and Carbon Pricing (MBI)?
- Optimal: Carbon Tax (Lowest Total Cost of Abatement)
- Deadweight loss from Ban (due to Higher Total Costs of Abatement)
- Deadweight loss increases as Ban is made earlier
- Phased-out Ban could help (send signal to market – e.g. 2050)

Questions

- Assumption about BAU (Lifetime of Plants? Price of Coal in future?)
- Assumptions about Future Generation Costs?
 - Renewable Costs may continue to Fall
- Regional Variation in the Marginal Costs of Abatement?
 - More Variation, more difference between C&C and Carbon Pricing
- Assumption about Infrastructure? Costs Not just about Power Station
- Assumption about carbon tax: set at Optimal level?
 - Political Economy: may be set at Sub-Optimal tax level

Other Thoughts

- Social Planner (Normative Analysis) v. Market Decisions (Positive Analysis)
- Stranded Assets
- Social Impact of Coal Mining Decline: ‘Just Transition’ Policies
- Additional Benefits: Lower Air Pollution
- Possible Unintended Consequences?
 - Trade impacts of importing solar panels or wind turbines
- External Factors: Carbon Border Adjustment Mechanism (CBAM)
- India: Leader or Laggard in the Green Race?